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ED 015 554 EA 001 062

BIRTH AND DEATH PROJECTIONS USED IN PRESENT STUDENT-TEACHER POPULATION GROWTH MODELS.

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REPORT NUMBER TN-11 PUB DATE 14 DEC 66
EDRS PRICE MF-$0.25 HC-$0.32 6P.

DESCRIPTORS- *POPULATION TRENDS, *SCHOOL DEMOGRAPHY, *METHODOLOGY, TABLES (DATA), SEX DIFFERENCES, RACIAL COMPOSITION, AGE GROUPS, DISTRICT OF COLUMBIA, DYNAMOD II,

A BRIEF DESCRIPTION OF THE METHODOLOGY USED IN DYNAMOD II TO PROJECT BIRTHS AND DEATHS IS PRESENTED. THE COMPUTATION OF DEATH RATES FOLLOWED THE METHOD USED BY THE DEPARTMENT OF HEALTH, EDUCATION AND WELFARE, MORTALITY DIVISION--DEATH RATE FOR AGE INTERVAL I THROUGH J EQUALS SUMMATION OF NUMBER OF DEATHS AT AGES I THROUGH J/SUMMATION OF POPULATION OF PERSONS AGED I THROUGH J. BIRTH PROJECTIONS WERE BASED UPON GRABILL'S MARRIAGE-PARITY-PROGRESSION METHOD WHICH TOOK ACCOUNT OF THE VARIABLES OF MARRIAGE, PARITY (NUMBER OF PREVIOUS CHILDREN BORN), AND BIRTH INTERVAL (TIME BETWEEN MARRIAGE AND SUCCESSIVE CHILDREN). BOTH BIRTHS AND DEATHS WERE CALCULATED BY SEX AND RACE. (HW)

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Division of Operations Analysis

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by

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Technical Note
Number 11

December 14, 1966

EA 001 062

OFFICE OF EDUCATION/U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

NATIONAL CENTER FOR EDUCATIONAL STATISTICS
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BIRTH AND DEATH PROJECTIONS USED IN PRESENT STUDENT-TEACHER POPULATION GROWTH MODELS

A brief description of the methodology used to project the births and deaths used in DYNAMOD II is given here. Due to time limitations in the scheduled life of the current Student-Teacher Population Growth model (soon to be superseded by the Student-Teacher Analysis of Growth Model) a detailed analysis leading to the development of a unique set of projections was not possible. However, in both birth and death rates, a detailed study of demographic terminology and basic assumptions underlying each of the various methods of projections had to be made in order to effect a more intelligent choice of selected values.

1. Death Rates

The most recently available (1964) death rate figures by sex and race for the particular age intervals concerned was used for projecting deaths until 1970. This, of course, implied no significant changes in these rates during the short period of projection - an assumption which is quite reasonable when past trends are viewed.

The computation of these rates followed the method used by the Department of Health, Education and Welfare, Mortality Division:

$$\text{Death Rate for age interval } \underline{i} \text{ through } \underline{j} = \frac{\sum (\text{No. of deaths at ages i through j})}{\sum (\text{population of persons aged i through j})}$$

The following table shows the death rate per 100,000 population in 1964 which was used in DYNAMOD II for future projections:

Age Interval	White		Non-White	
	Male	Female	Male	Female
0-4	548.1	419.2	1072.5	858.7
5-14	49.0	32.0	71.4	47.6
15-19	128.6	51.0	161.1	79.8
20-24	171.2	63.8	281.9	128.2
25-44	256.4	143.3	614.9	389.8
45 & over	3184.6	2224.6	3522.0	2618.1

The primary data source was: U. S. Department of Health, Education and Welfare, Vital Statistics of the United States, Vol. II - Mortality, Part A, Washington, D. C.

2. Births

This perennial "Waterloo of demographers" was not challenged analytically during this round of development of the Student-Teacher Population growth model (DYNAMOD II). After detailed study in order to evaluate the various problems and possible solutions offered, the final set of projections used was based upon Grabill's marriage-parity-progression method. 1/ This method took account of the variables of marriage, parity (number of previous children born), and birth interval (time between marriage and successive children).

1/ U. S. Bureau of the Census, Population Estimates, Series P-25, No. 286, July 1964.

In Grabill's model, only one set of estimates (deemed "high") was developed. In order to more nearly fit recent data, an overall 15 percent reduction was made in the projected number of births.

The following table gives the projected number of births (in thousands) used in DYNAMOD II.

Total No. of Births (in thousands), Estimated and Projected 1959-60 through 1970-71 1/ 2/ 3/

Year	White and Non-White			White		Non-White	
	Total	Male	Female	Male	Female	Male	Female
1959-60	4279	2191	2088	1847	1752	344	336
1960-61	4350	2227	2123	1878	1782	349	341
1961-62	4260	2181	2079	1834	1740	347	339
1962-63	4186	2143	2043	1798	1705	345	338
1963-64	4142	2121	2021	1772	1680	349	341
1964-65	3948	2021	1927	1687	1600	334	327
1965-66	3678	1883	1795	1574	1494	309	301
1966-67	3590	1838	1752	1539	1459	299	293
1967-68	3670	1879	1791	1573	1493	306	298
1968-69	3740	1915	1825	1603	1521	312	304
1969-70	3830	1961	1869	1641	1556	320	313
1970-71	3910	2002	1908	1675	1588	327	320

1/ Number of birth for 1959-60 through 1964-65 from U. S. Bureau of the Census, Population Estimates, Series P-25 No. 345, July 29, 1966; births for 1965-66 from U. S. Dept. of H.E.W. Monthly Vital Statistics Report, October 6, 1966.

2/ For projected white and non-white proportions, 1966-67 through 1970-71, based on average of Series "C" and "D" projections, Population Estimates, Series P-25, No. 345, July 1966.

3/ Sex ratio assumed for all years: white- 1054 males/1000 females; non-white- 1023 males/1000 females. From U. S. Dept. HEW, Vital Statistics of the U. S., 1964, Vol. I - Natality, 1966, Washington, D. C.

In a future Technical Note, if possible (1) a more detailed comparative evaluation of the various methods proposed, and (2) an investigation of socio-economic and demographic variables will be made, especially in the light of current birth control developments. With respect to the latter, the possible role of non-physiologic variables relating to the mother such as educational level, religion, increasing participation in the labor force, and increase in rate of urbanization will be analyzed as possible parameters in birth projections.